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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/521,433

01/14/2005

Kazuya Goto

264595US0PCT

1537

22850

7590

07/02/2008

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

PIZIALI, ANDREW T

ART UNIT

PAPER NUMBER

1794

NOTIFICATION DATE

DELIVERY MODE

07/02/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/521,433	<b>Applicant(s)</b> GOTO ET AL.	
	<b>Examiner</b> Andrew T. Piziali	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 1,3 and 15-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2 and 4-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/13/2008 &amp; 5/23/2008</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/13/2008 has been entered.

### ***Response and Declaration***

2. The declaration filed on 5/23/2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 4-7, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,391,436 to Xu in view of anyone of USPN 4,808,639 to Chernack or USPN 5,589,523 to Sawaoka.

Regarding claims 2, 4-7, 11 and 13, Xu discloses a prepreg comprising a reinforcing fiber substrate sheet containing reinforcing fiber, and a matrix resin, wherein said matrix resin exists on both surfaces of the substrate, and a portion inside the substrate into which the matrix resin has not been impregnated is continuous (see entire document including column 6, lines 40-63, column 7, lines 52-58, and column 15, lines 10-13).

Xu does not appear to mention the matrix resin comprising a microcapsule based latent curing agent, but Chernack and Sawaoka each disclose that it is known in the art to combine a microcapsule based latent curing agent and a matrix resin to increase storage stability and/or to increase curing control of the matrix resin (see entire documents including column 1, lines 25-48 and column 2, lines 38-49 of Chernack and column 1, line 14 through column 2, line 2 of Sawaoka). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the matrix resin with a microcapsule based latent curing agent, motivated by a desire to increase storage stability and/or to increase curing control of the matrix resin.

A patent for a combination, which only unites old elements with no change in their respective functions, obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men. Where the combination of old elements performed a useful function, but it added nothing to the nature and quality of the subject matter already patented, the patent failed under §103. When a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. **KSR v. Teleflex**

Regarding claim 4, Xu discloses that the matrix resin may be a thermosetting resin composition (column 9, lines 40-51).

Regarding claim 5, Xu discloses that the resin may be cured at a temperature on the order of about 55 to about 75C (column 9, lines 25-38). Therefore, it appears that the resin is curable by holding at 90C for 2 hours. In the event that it is shown that resins would not inherently possess the claimed property, Xu also discloses that higher and lower cure temperatures can be utilized (column 9, lines 25-38). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the resin with any suitable curing temperature and time, such as 90C for 2 hours, because it is within the general skill of a worker in the art to select a known curing temperature and time on the basis of its suitability and desired characteristics.

Regarding claim 6, Xu discloses that the minimum viscosity of the resin may be no more than 1000 poise (column 9, lines 16-24).

Regarding claim 7, Xu discloses that the resin composition may comprise epoxy resin as a primary component (column 9, lines 40-52).

Regarding claim 11, Xu discloses that the reinforcing fibers may be carbon fiber or glass fiber (column 7, lines 52-58).

Regarding claim 13, Xu discloses that the substrate sheet may be a unidirectional, woven, knitted, braided, mat, and the like (column 7, lines 52-58).

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5. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,391,436 to Xu in view of anyone of USPN 4,808,639 to Chernack or USPN 5,589,523 to Sawaoka as applied to claims 2, 4-7, 11 and 13 above, and further in view of USPN 5,279,893 to Hattori.

Regarding claim 8, Xu discloses that a thermosetting and thermoplastic resin mixture may be used (column 9, lines 40-52), but Xu does not appear to mention the use of a mixture wherein the thermoplastic is not dissolved within the thermosetting resin composition. Hattori discloses that it is known in the prepreg art to use a thermosetting and thermoplastic resin mixture wherein the thermoplastic is not dissolved with the thermosetting resin composition, to give the prepreg excellent toughness (see entire document including column 2, lines 25-44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the resin from any suitable resin material, such as a thermosetting and thermoplastic resin mixture wherein the thermoplastic is not dissolved with the thermosetting resin composition, as taught by Hattori, because the resin would provide the prepreg with excellent toughness and because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability and desired characteristics.

Regarding claim 9, Hattori discloses that the fibers may be staple fibers (column 4, lines 5-15). Considering that staple fibers have lengths of from 1 inch to 8 inches (25.4 to 203 mm), Hattori discloses that the fibers may have a length of 1 to 50 mm. It is noted that Hattori also discloses that the fibers may have any length sufficient enough to be paralleled (column 4, lines 5-15). Considering that fibers of 1 to 50 mm may be paralleled, Hattori discloses that claimed fiber length with sufficient specificity.

Regarding claim 10, Hattori discloses that the fibers may have a size of 500 denier (56 tex) or less (column 4, lines 5-15).

6. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,391,436 to Xu in view of anyone of USPN 4,808,639 to Chernack or USPN 5,589,523 to Sawaoka as applied to claims 2, 4-7, 11 and 13 above, and further in view of USPN 6,045,898 to Kishi.

Regarding claim 12, Xu is silent with regards to prepreg substrate fiber weight, therefore, it would have been necessary and thus obvious to look to the prior art for conventional substrate weights. Kishi provides this conventional teaching showing that it is known in the prepreg art to use a substrate weight of 100 to 320 g/m<sup>2</sup> (see entire document including column 14, lines 44-51 and claim 15). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the prepreg with a substrate weight of 100 to 320 g/m<sup>2</sup>, as taught by Kishi, motivated by the expectation of successfully practicing the invention of Xu and because the prepreg would possess the desired tackiness and smoothness.

Regarding claim 14, Xu is silent with regards to prepreg substrate thickness, therefore, it would have been necessary and thus obvious to look to the prior art for conventional substrate thicknesses. Kishi provides this conventional teaching showing that it is known in the prepreg art to use a substrate thickness of 0.15 to 0.35 mm (150 to 350  $\mu$ m) (see claim 15). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the prepreg with a substrate thickness of 150 to 350  $\mu$ m, as taught by Kishi, motivated by the expectation of successfully practicing the invention of Xu.

***Response to Arguments***

7. Applicant's arguments filed 5/23/2008 have been fully considered but they are not persuasive.

Firstly, it is noted that the only portion of the current specification that refers to a microcapsule based latent curing agent is Example 9. More specifically, only page 51, line 21 refers to a microcapsule curing agent. The current specification does not teach or suggest benefits of using a microcapsule curing agent over other known curing agents such as those listed on page 25, lines 11-19 of the current specification. The current specification does not teach or suggest unexpected results from the use of a microcapsule curing agent.

The applicant asserts that the applied prior art, alone or in combination, does not disclose or suggest the declaration results (increase in viscosity of the resin composition upon rupturing the microcapsule based latent curing agent, decrease in the minimum viscosity of a matrix comprising a microcapsule curing agent compared to a matrix not comprising a microcapsule curing agent, or the viscosity/temperature plot difference between a matrix comprising a microcapsule curing agent versus a matrix not comprising a microcapsule curing agent) obtained when using a prepreg in which the matrix comprises a microcapsule based latent curing agent. The applicant appears to be arguing unexpected results. The examiner respectfully disagrees.

Firstly, the applicant appears to be arguing unexpected results but the applicant falls well short of evidencing unexpected results. A matrix resin comprising a microcapsule curing agent will produce results that are either the same or different from the results produced by a matrix not comprising a microcapsule curing agent. In the event that a results(s) is different, the difference is either expected or unexpected. The applicant has merely pointed to three results



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that are different between the two matrix materials and asserted, without evidence of any kind, that the results are unexpected. The examiner contends that the applicant has failed to show that the results are unexpected or that the results are sufficiently unexpected to overcome the obviousness rejection.

Secondly, said results are expected:

Regarding the increase in viscosity, the rupturing of the microcapsule based latent curing agent initiates a curing (hardening) reaction of the resin. Therefore, an increase of the viscosity of the resin composition upon rupturing the microcapsule based latent curing agent is expected.

Regarding the decrease in the minimum viscosity, the microcapsules expectedly decrease the viscosity of the matrix (see graph in the declaration filed 11/13/2007). It is expected that the minimum viscosity of the matrix comprising the microcapsules would be lower because added time is necessary to destroy or melt the membrane of the microcapsule which allows the viscosity to keep decreasing with an increase in temperature.

Regarding the viscosity difference between the two samples with temperature change, it is expected that the viscosity of the matrix comprising the microcapsules would react slower to temperature change because added time is necessary to destroy or melt the membrane of the microcapsule.

***Conclusion***

8. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

9. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541.

The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew T Piziali/  
Primary Examiner, Art Unit 1794